IN THE CLAIMS:

Please CANCEL claim 14, without prejudice or disclaimer, ADD new claim 19, and AMEND the claims in accordance with the following:

1. (Currently Amended) A polarization mode dispersion compensator comprising:

a polarization controller ~~to transform~~ rotating a polarization angle of an input optical signal and outputting polarization controlled light;

a polarization mode dispersion (PMD) compensating device ~~to compensate for~~ compensating~~a~~ polarization mode dispersion of the ~~input optical signal~~ polarization controlled light and ~~output~~ outputting ~~an output optical signal~~a PMD compensated light;

a signal quality monitor ~~to measure~~ measuring~~quality~~ a degree of polarization (DOP) of the ~~output optical signal~~ PMD compensated light and ~~generate~~ generating a feedback signal indicating the measured ~~quality~~ DOP of the ~~output optical signal~~PMD compensated light; and

a control unit ~~to determine an amount of change of a control signal applied to the polarization controller for each feedback loop, by evaluating degree of polarization response to the control signal using a plurality of feedback signals generated in past feedback loops, change the control signal by the determined amount, and apply a changed control signal to the polarization controller~~ controlling the polarization controller and PMD compensating device based on the measured DOP..

2. (Currently amended) The polarization mode dispersion compensator according to claim 19, wherein

the control unit obtains the degree of polarization from each of the plurality of feedback signals, compares a difference between a maximum and a minimum of the obtained degree of polarization with a threshold value, and increases the amount of change when the difference is greater than the threshold value.

3. (Currently Amended) The polarization mode dispersion compensator according to claim 2, wherein

the control unit obtains the degree of polarization from a current feedback signal, compares the obtained degree of polarization with the maximum and the minimum of degree of polarization, and decreases the amount of change when the obtained degree of polarization is smaller than the maximum and greater than the minimum and the difference is smaller than the threshold value.

4. (Currently Amended) The polarization mode dispersion compensator according to claim 1~~9~~, 2, or 3, wherein the control unit marks change of the control signal leading to a worse compensation performance and skips a control step with the marked change in one or more of succeeding feedback loops.

5. (Currently Amended) The polarization mode dispersion compensator according to claim 1~~9~~, 2, or 3, wherein the polarization controller includes birefringent elements controllable ~~like~~as a concatenation of one or more rotatable waveplates each of which is with a fixed amount of retardance.

6. (Currently Amended) The polarization mode dispersion compensator according to claim 5, wherein the birefringent elements are realized by multiple three-electrode sections on a $LiNbO_3$ substrate, each of which operates ~~like~~as a rotatable waveplate controlled by voltages applied to electrodes.

7. (Currently Amended) The polarization mode dispersion compensator according to claim 1~~9~~, 2, or 3, wherein the polarization controller includes birefringent elements controllable ~~like~~as a concatenation of one or more rotatable waveplates whereby an amount of retardance is adjustable.

8. (Currently Amended) The polarization mode dispersion compensator according to claim 1~~9~~, 2, or 3, wherein:

the polarization controller includes birefringent elements controllable ~~like~~as a concatenation of one or more rotatable waveplates; and

the control unit marks a rotation direction of one of the waveplates leading to a worse compensation performance and skips a control step with change of a control signal for the marked direction in one or more of succeeding feedback loops.

9. (Currently Amended) The polarization mode dispersion compensator according to claim 1~~9~~, 2, or 3, wherein the compensating device is an optical element with a fixed amount of differential group delay.

10. (Currently Amended) The polarization mode dispersion compensator according to

claim 19, 2, or 3, wherein the compensating device is an optical element with a variable and adjustable amount of differential group delay.

11. (Original) The polarization mode dispersion compensator according to claim 10, wherein the control unit determines an amount of change of the differential group delay for each feedback loop by evaluating a past trend of changes of the differential group delay of the compensating device.

12. (Original) The polarization mode dispersion compensator according to claim 11, wherein the control unit checks whether the differential group delay shows one of a continuous decrease and increase, and increases the amount of change of the differential group delay when the differential group delay shows the one of the continuous decrease and increase.

13. (Currently Amended) The polarization mode dispersion compensator according to claim 19, 2, or 3, wherein:

the signal quality monitor includes a polarimeter which measures components of a Stokes vector and generates a feedback signal indicating the components of the Stokes vector; and

the control unit obtains the degree of polarization using the components of the Stokes vector.

14. (Cancelled)

15. (Currently Amended) A polarization mode dispersion compensating method comprising:

~~Transforming~~rotating a polarization angle of an input optical signal and outputting polarization controlled light through a polarization controller;

compensating ~~for~~ a polarization mode dispersion of the ~~input optical signal~~polarization controlled light and outputting a polarization mode dispersion (PMD) light through a PMD compensating device to generate a PMD compensated light~~an output optical signal~~;

measuring ~~quality~~a degree of polarization (DOP) of the ~~output optical signal~~ PMD compensated light to generate a feedback signal indicating ~~the~~ measured ~~quality~~ DOP of the ~~output optical signal~~PMD compensated light;

~~determining an amount of change of a control signal applied to the polarization controller for a~~

~~current feedback loop, by evaluating degree of polarization response to the control signal using a plurality of feedback signals generated in past feedback loops;~~ and

~~changing the control signal by the determined amount and applying a changed control signal to the polarization controller~~controlling the polarization controller and PMD compensating device based on the measured DOP.

16. (Currently Amended) The polarization mode dispersion compensating method according to claim 15, wherein

the determining compares a difference between a maximum and a minimum of the degree of polarization obtained from the respective feedback signals, with a threshold value, and increases the amount of change when the difference is greater than the threshold value.

17. (Currently Amended) The polarization mode dispersion compensating method according to claim 16, wherein the determining obtains the degree of polarization from a current feedback signal, compares the obtained degree of polarization with the maximum and the minimum of the degree of polarization, and decreases the amount of change when the obtained degree of polarization is smaller than the maximum and greater than the minimum and the difference is smaller than the threshold value.

18. (Original) The polarization mode dispersion compensating method according to claim 15, 16, or 17, further comprising:

marking change of the control signal leading to a worse compensation performance; and

skipping a control step with the marked change in one or more of succeeding feedback loops.

19. (New) The polarization mode dispersion compensator according to claim 1, wherein the control unit determines an amount of change of a control signal applied to the polarization controller for each feedback loop, by evaluating a DOP in response to the control signal using a plurality of feedback signals generated in past feedback loops, and changes the control signal by the polarization controller.